

PRACTICAL SCIENCE.

MANY SUBJECTS DISCUSSED BY THE MECHANICAL ENGINEERS.

Reports and Professional Papers--Trip Down the River--The Proposed Island Basin Opposite Richmond.

The convention of the American Society of Mechanical Engineers was called to order in the summer dining-room of the Exchange Hotel promptly at 9:30 o'clock yesterday morning by the president, Mr. Oberlin Smith. The attendance was quite large.

The secretary, Mr. F. B. Hutton, read the general report of the Council, which embodied the reports on finance, library, etc. The report on finance showed a balance of \$17,700.00.

Receipts, including balance from last year, \$17,700.00. Disbursements, \$17,700.00. Balance, \$0.00.

The uncollected dues amount to \$175, which is considered a good showing, as these are generally reported in excess of \$175.

The credit to the library fund is \$2,100.00.

BALLOT FOR OFFICERS.
The report of the tellers was then read, and shows the balloting for officers for the ensuing year to have resulted as follows:

President, Robert W. Hunt, inspector and consulting engineer, Chicago; Vice-presidents, Stephen W. Baldwin, New York city; John F. Pankhurst, Cleveland, O.; and Alexander Gordon, Hamilton, O.; Managers, Andrew Fletcher, New York city; W. R. Warner, Cleveland, O.; and Coleman Sellers, Jr., Philadelphia, Pa.; Treasurer, William H. Wiley, New York city.

The secretary is elected by the council. Vice-presidents John Sharp, G. W. Weeks, and Dr. V. Wood hold over, and do the following managers: F. M. Ball, G. M. Bond, William Forsyth, J. E. Denton, C. W. Nason, and H. H. West.

REPORTS PRESENTED.
The society's committee on "Testing Materials," and on Methods of Test of Locomotive Cylinders, and on "Uniformity of Flange Diameters" reported progress.

Mr. George H. Barnes, of Boston, chairman of the Committee on Methods of Test of Locomotive Cylinders, read the report of that committee. Mr. Barnes is an expert and consulting engineer, who is regarded as high authority on the subject that his committee treated. The report is elaborate and very exhaustive, and is in favor of the planer-displacement system in connection with the leakage test, preference to water, nozzle or steam instrument.

REPORTS ON LENGTH.
Professor Jackson, of Stevens Institute, Hoboken, N. J., commented the report in the main, but took issue with some of the details.

Professor James E. Denton, of Stevens Institute, expressed his admiration for the report, and said it was one of the best that had ever been presented to this or any other society.

Mr. W. M. V. W. of New York, and Mr. William M. Bart, of Philadelphia, also discussed the paper, the former's remarks being confined principally to the measurement of length of stroke.

Mr. John T. Hawkins, president of the Campbell Printing Press and Manufacturing Company, endorsed the report, but thought it was in one objection.

Mr. J. F. Holloway asked if the adoption of the report meant that it should be disseminated as the society's ultimatum. The President replied no; that it was the custom of the society to accept a report and disseminate it for what it was worth.

The report was, on motion, accepted.

A LETTER FITS.
At this juncture the stove in the hall began to smoke, and various exclamations were made, and one that a committee on stoves be appointed and one that a committee on hydraulics be requested to act with them. The incident developed that it was not a scientific experiment.

THE COLUMBIAN EXPOSITION.
The Secretary read the report of the committee of the various engineering societies, etc., which assemble in Chicago in October to consider the desirability of establishing engineering headquarters and holding international engineering congress in that city during the Columbian Exposition.

The report recommends--first, that engineering headquarters be established; second, that an international congress of engineers be held to last six days. It was adopted.

ENGINEERS' HAND-BOOK.
The Secretary read a letter from Mr. Henry Leon Himes recommending a hand book such as is used by the German engineers.

The President thought such a book would be very valuable.

On motion of Mr. Holloway the communication was laid on the table.

PROFESSIONAL PAPERS.

At the request of the Secretary, Mr. Munford commenced the reading of the professional paper of Frank Van Hook, chief engineer of the San Diego Cable Railway Company, San Diego, Cal., entitled "Light Cable Road Construction," but before he had finished the time allotted for the reading of such papers had expired. The paper is particularly well illustrated with mechanical drawings.

The next professional paper was by R. H. Thurston, director of Sibley College, Cornell University, and is entitled, "Authorities on Steam Jackets--Facts and Current Opinions." Mr. Munford gave a running commentary of the contents of this paper, and discussion on it and the first paper of the real was postponed until the evening session.

A RICHMOND PROBLEM.

The President stated that he had a paper upon "an engineering problem of the city of Richmond," by Mr. W. H. Adams, of New York, who was a candidate for membership in the society. It was not the rule of the society to admit such papers when the programme of regular professional papers was pending, but in view of the fact that the paper would be made more intelligible by the trip that was about to be taken he suggested that some one move that it be made the special order for this session. This motion was made and carried.

MR. ADAMS'S PAPER.

Mr. Adams was invited to read the paper, but as all the members would be provided with a copy of it during their trip, he declined to do so, and gave an outline of his views. The paper, after alluding to the fact that the South is well launched on the tide of prosperity and to the multitudinous industries that are springing up on every hand, says:

It is, however, a manifest lack of comprehensive vision for developing the outside of the interior to the enormous growth of the interior trade, and which is being entirely to local circumstances and conditions which have prevailed during the past twenty years, yet in the face of the late census are gathered, and the changes are to take place in the next decade are admitted, we should be quick to study and comprehend any scheme of improvement, now presented, which appeals to our judgment as likely to develop the country at large and to the southern States more particularly.

THE OLD ROAD OFFERS MANY INSTANCES of late-day engineering works, in improvement of rivers like the Clyde, at a cost of nearly \$10,000,000. The Tyne, at a cost of

over \$12,000, and others of lesser note in England.

"Without citing other examples at this time, I wish to bring to the attention of this branch of the profession the very comprehensive and efficient general character of the James-River improvements, and his noble example to induce him to our society, sufficient to induce him to our society."

HE GRASPED THE IDEA.

"Mr. Burgwyn has grasped the idea, in its broadest sense, that Richmond should be made an inland city, and that the growing trade of the great interior country should, with a basis for expansion only offered when convenient, be conducted through Richmond, added to a naturally advantageous location for comparatively small expenditures."

Primarily, the projector is in favor of utilizing the enormous water-shed of the James river and its one natural outlet at Richmond. To its fullest extent, the physical conditions are such that imposing reservoirs for storage of the excessive rainfall of the contiguous region--say, a drainage area of 42,000 square miles, equal to 6,000 square miles of territory--are not only practicable from the nature of the bottom lands of the upper country, but they are also practicable from the advantages to be gained as compared with public improvements of like nature in other parts of the country. To its fullest extent, the physical conditions are such that imposing reservoirs for storage of the excessive rainfall of the contiguous region--say, a drainage area of 42,000 square miles, equal to 6,000 square miles of territory--are not only practicable from the nature of the bottom lands of the upper country, but they are also practicable from the advantages to be gained as compared with public improvements of like nature in other parts of the country.

By any reasonable system of inland reservoirs, it is estimated that the city of Richmond could be guaranteed at least 4,000 cubic feet per second during summer months, and under a head of 15 feet this would average say 40,000 horsepower. To enable the reader to compare this measured value with well-known sections where the expenditure of millions of money to secure the advantages of power of this character, the following table is presented, showing the summer months alone has been completed:

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BAPTIST MISSIONS.

WORK OF THE STATE BOARD PRESENTED TO THE ASSOCIATION.

A Year of Great Prosperity--The Results of Co-operation--Temperance Resolutions--Other Business.

Rev. Dr. Cornelius Tyree led the devotional exercises with which the second day's session of the General Association was opened at Leigh-Street Baptist church yesterday morning.

Rev. J. M. Harlowe, Rev. P. G. Elsom, Dr. J. William Jones, and Rev. S. P. Huff led in prayer and several hymns were sung.

The Committee on Order of Business, through Rev. Dr. Cooper, reported the results of the year's work, showing a total of \$2,000.00, of which \$1,000.00 was for the State Board, and \$1,000.00 for the General Association.

The Treasurer, Norrell Ryland, read his annual report, which showed receipts and disbursements as follows:

State Mission Board: Balance on hand October 31, 1889, \$3,000.00, contributing for the year, \$1,000.00, total, \$4,000.00.

General Association: Balance on hand, \$2,000.00; contributions during the year, \$1,000.00, total, \$3,000.00.

Foreign Missions: Balance on hand, \$1,000.00; contributions during the year, \$1,000.00, total, \$2,000.00.

Home Mission Board: Balance on hand, \$700.00; contributions during the year, \$1,300.00, total, \$2,000.00.

Ministers' Relief Fund: Balance on hand, \$300.00; contributions during the year, \$1,700.00, total, \$2,000.00.

Total: Balance on hand, \$5,000.00; receipts during the year, \$2,000.00, total, \$7,000.00.

The report gives the details of receipts by associations and of disbursements to the several objects.

The report was adopted.

CO-OPERATIVE WORK.
William Elyson, Esq., read the report of the Committee on Co-operation, showing the gratifying results of the efforts of the churches and District Associations, which have co-operated with the General Association and contributed to the several boards.

The report brings out the fact that despite the "hard times" all of the boards have the Home Board had the largest number of churches and District Associations, and the second deficit to that board was due to the fact that year before last the board made a special effort in Virginia and collected over \$3,000 for the payment on the Havana House, so that there has been a real increase in the contributions of the State to the general fund of this year.

Rev. Dr. C. Tyree alluded to the long years during which he had attended the sessions of this body, and to the steady increase of contributions to the boards, and general increase of interest in the work of the denomination, and noted that there should be much larger increase in contributions--that these should keep a more steady pace with the material progress of the Commonwealth.

The report elicited a further interesting discussion, which was participated in by Rev. Dr. M. P. Picher, of Petersburg; Mr. J. M. Morris, Esq., of Glade Spring; Rev. J. W. Brown, of Richmond; Rev. J. W. Jones, of Atlanta; Rev. W. Beale, of Buchanan; Professor H. H. Harris, of Richmond College; Rev. J. B. Turpin, of Charlottesville; Rev. Dr. A. Broadbent, of Carolina; who made an eloquent statement of the work of the denomination, and of the progress of the work.

There is in the magnificent harbor of Hampton Roads an entrance which ranks the harbor of the Chesapeake as one of the world like the Amazon. The river itself is one continuous harbor, reaching into the country ninety-eight miles--the largest body of water in the world.

This whole distance of ninety-eight miles consists of long, deep, capacious pools, seldom or never subject to drought, and is systematically worked upon to produce a uniform depth of twenty-two feet at low water.

CONFERENCES WITH NORTHERN CITIES.
With such a depth Richmond can compete with any of the northern cities, as she will soon be sixty-seven miles nearer the sea than Baltimore, and seventy miles nearer than Philadelphia.

New York has now 21 to 25 feet at low tide, with a mean rise of 4 feet 3 inches--29 feet at high tide.

Philadelphia has on her 19 feet at low tide, with a rise of 6 feet--25 feet.

San Francisco has at her wharves about 25 feet at low tide, with a rise of 12 feet--47 feet.

Baltimore has 27 feet at low tide, with a rise of 15 feet--42 feet.

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souls to Christ that the board has ever had.

Professor Cooke gave detailed interesting statistics showing the progress of the work in the Valley Association.

He also brought out the wonderful material resources and prospects of the Southwest Virginia, and urged that the new title of population must be met by the old gospel.

Professor Cooke brought out the point that the State of Virginia has at last come to principles that Washington and Jefferson advocated one hundred years ago--have abolished slavery, established equality of rights, and entered upon a system of general education.

HOW TO RAISE FUNDS.
The report on State missions was adopted, and there were then presented resolutions which had been adopted by the State Mission Board in reference to some better system of raising funds for church building by churches in need of help. The resolutions proposed a plan by which the churches should be divided into districts, each district to be under the supervision of a district association, which the church belongs; that it then apply to the State Mission Board for its endorsement, and then be advised to canvass for help.

These resolutions excited considerable interest and discussion, which was particularly marked in the case of the resolutions of the district associations, which were adopted by a large majority.